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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/646,226

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Izaya Okae

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EXAMINER

ECHELMMEYER, ALIX ELIZABETH

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/16/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/646,226	<b>Applicant(s)</b> OKAE ET AL.	
	<b>Examiner</b> Alix Elizabeth Echelmeyer	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6-10, 12-14 and 16-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-10, 12-14 and 16-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 14, 2008 has been entered.
2. Claims 6 and 12 have been amended. Claims 1-5, 11 and 15 are cancelled. Claims 6-10, 12-14 and 16-21 are pending and are rejected for the reasons given below.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-9, 12, 13, are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaura (JP 2002-075368) in view of Kurose et al. (WO00/02280, with US6,824,924 used as an English translation, since it is the 371 of the foreign application) and as evidenced by Chaloner-Gill et al. (US 2002/0192137).

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As for claims 6, 12, 16 and 19, Yamaura teaches a positive electrode active material for a nonaqueous electrolyte cell wherein the particles of active material are of the formula  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  and the surfaces of the particles are covered by particles of the general formula  $\text{LiFePO}_4$  (abstract, [0001]).

In paragraph [0037] of the instant disclosure, applicants name  $\text{LiFePO}_4$  as a preferable positive active material but fail to state explicitly that  $\text{LiFePO}_4$  is of the olivine structure.

Chaloner-Gill teaches that crystalline lithium iron phosphate has an olivine structure ([0126]).

Regarding claims 7, 8, 17, 18, 20 and 21, the  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  particles are 11.458  $\mu\text{m}$  on average and the  $\text{LiFePO}_4$  particles are 0.185  $\mu\text{m}$  on average ([0054]).

With further regard to claims 8, 18 and 21, when a single layer of  $\text{LiFePO}_4$  particles is used as the coating, as is discussed in the first paragraph of this page, the thickness would fall in the claimed range.

With further regard to claims 6, 12, 16 and 19, Yamaura fail to teach the claimed weight percent of  $\text{LiFeO}_4$  to lithium nickelate substrate.

Yamaura teaches that the combination of the two positive electrode active materials results in a material that is both stable (because of the  $\text{LiFePO}_4$ ) and has a high capacity (because of the lithium multiple oxide) ([0007]). Further, a balance of the

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two materials is necessary for the positive attributes of both materials to be available in the composite ([0008], [0025]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to experiment with the amounts of each of the material in the positive electrode active material in order to achieve a balanced composite material. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (MPEP 2144.05 IIB).

Yamaura fails to teach the lithium nickelate compound of instant claims 6, 9, 12, 13, 16 and 19.

Kurose et al. teach  $\text{LiNiO}_2$  as a positive electrode active material (column 2 lines 56-58). Kurose et al. further teach that the use of  $\text{LiNiO}_2$  as a positive electrode active material leads to a reduction in size and weight in the battery, increasing energy density.

It would be desirable to use  $\text{LiNiO}_2$  as a positive electrode active material in the battery of Yamaura such as taught by Kurose et al. since it would lead to a reduction in size and weight in the battery, increasing energy density.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to look to the teachings of Kurose et al. suggesting the use of  $\text{LiNiO}_2$  as a positive electrode active material in the battery of Yamaura, since such a substitution of  $\text{LiNiO}_2$  for the lithium nickel oxide of Yamaura would result in the reduction of size and weight of the battery, leading to an increase in energy density.

5. Claims 10 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaura et al. in view of Kurose et al. as applied to claims 6 and 12 above, and further in view of Goodenough et al. (US 6,391,493).

Yamaura et al. in view of Kurose et al. fail to teach that the olivine compound of the positive active material is  $\text{LiMnPO}_4$ .

Goodenough et al. teach that that a preferred olivine electrode compound is  $\text{LiMnPO}_4$  (column 2 lines 22-24), since it has a larger free volume for lithium-ion motion, which leads to higher lithium-ion conductivity and higher power density, as well as making an inexpensive and nonpolluting battery (column 1 lines 51-57).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to look to the teachings of Goodenough et al. suggesting the use of  $\text{LiMnPO}_4$  as a positive electrode active material in the battery of Yamaura in view of Kurose et al., since such a substitution of  $\text{LiMnPO}_4$  for the  $\text{LiFePO}_4$  of Yamaura is obvious over the teachings of Goodenough et al.

### ***Response to Arguments***

6. Applicant's arguments filed August 14, 2008 have been fully considered but they are not persuasive. See Advisory Action mailed August 22, 2008 for full response to the arguments.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1795

aee